

ELEMENT 4: OPERATIONS AND MAINTENANCE PROGRAM (MEASURES & ACTIVITIES)

Collection System Maps and Description of Existing Facilities

The sanitary sewer collection system consists of approximately 2,200 miles of sewer mains. There are 106 single barrel and 110 double barrel inverted sewers (siphons). The majority of the sewers were built in the early 1900s. The predominant pipe material is vitrified clay pipe.

Distribution of Gravity Sewers

Pipe Diameter (inches)	Length (feet)	Length (miles)	Percent of System (by length)
6	6,655,400	1,260.5	58.9
8	2,330,700	441.4	20.6
10	620,600	117.5	5.5
12	347,700	65.9	3.1
14-16	239,700	45.4	2.1
18	182,100	34.5	1.6
21	145,500	27.6	1.3
=>24	784,800	148.6	6.9
Totals	11,306,500	2,141.4	100%

The entire City of San Jose sanitary sewer collection system is available in published mapbook format or can be assessed through the DPW's intranet site at <https://cpms.sanjoseca.gov/emap/>. Information on the maps includes the following: pipe size; segment number; pipe length; slope of pipe; and manhole locations.

Facility Type	Basic Map Information
Manholes	Identification Number Location, with reference to streets Size Rim Elevation Invert Elevation
Pipes (Mains)	Segment Identification Number Location, with reference to streets Size Direction of Flow Length Slope Material Type Project Associated with Construction of Pipe

Tract numbers indicating when the tract was built are also available on the maps. These tract numbers can be cross referenced to address when the system was built and as-built plans can be retrieved for further investigative purposes.

City's sanitary collection system map is up to date. There is zero backlogs in both improvement plan and discrepancy report to date. This is an on-going task based on the improvement plans and discrepancy reports City's GIS/Infrastructure Section receives.

City encourages reporting of discrepancies. Online Discrepancy Report can be found at <https://cpms.sanjoseca.gov/emap> and select "Create a Data Discrepancy Report" (located below the Intersection Finder" box), and can be emailed to PW.GIS@sanjoseca.gov or printed out and provided to the GIS Section. A marked-up copy of the map showing the discrepancy locations and an explanation regarding the discrepancy and/or reason for correction should be included in the report.

The sanitary sewer database is being updated on a daily basis to reduce the backlog to zero. The ideal plan to update the map is every three months. The GIS Section staff then creates the updated version in color to be published in the City's Internet/Intranet sites, and in black and white to be published in hard copies. The original copy of the black and white hardcopy maps goes to Department of Transportation for mass duplication.

The collection system map includes the following: scale; north arrow; date of the last version; service area boundaries; property lines; other landmarks; manhole and other access points; street names; flow monitors; force mains; pump stations; lined sewers, main, trunk, and interceptor sewers; easement lines and dimensions; pipe ids, pipe material, pipe diameter and pipe length; record/plan ids; and slope.

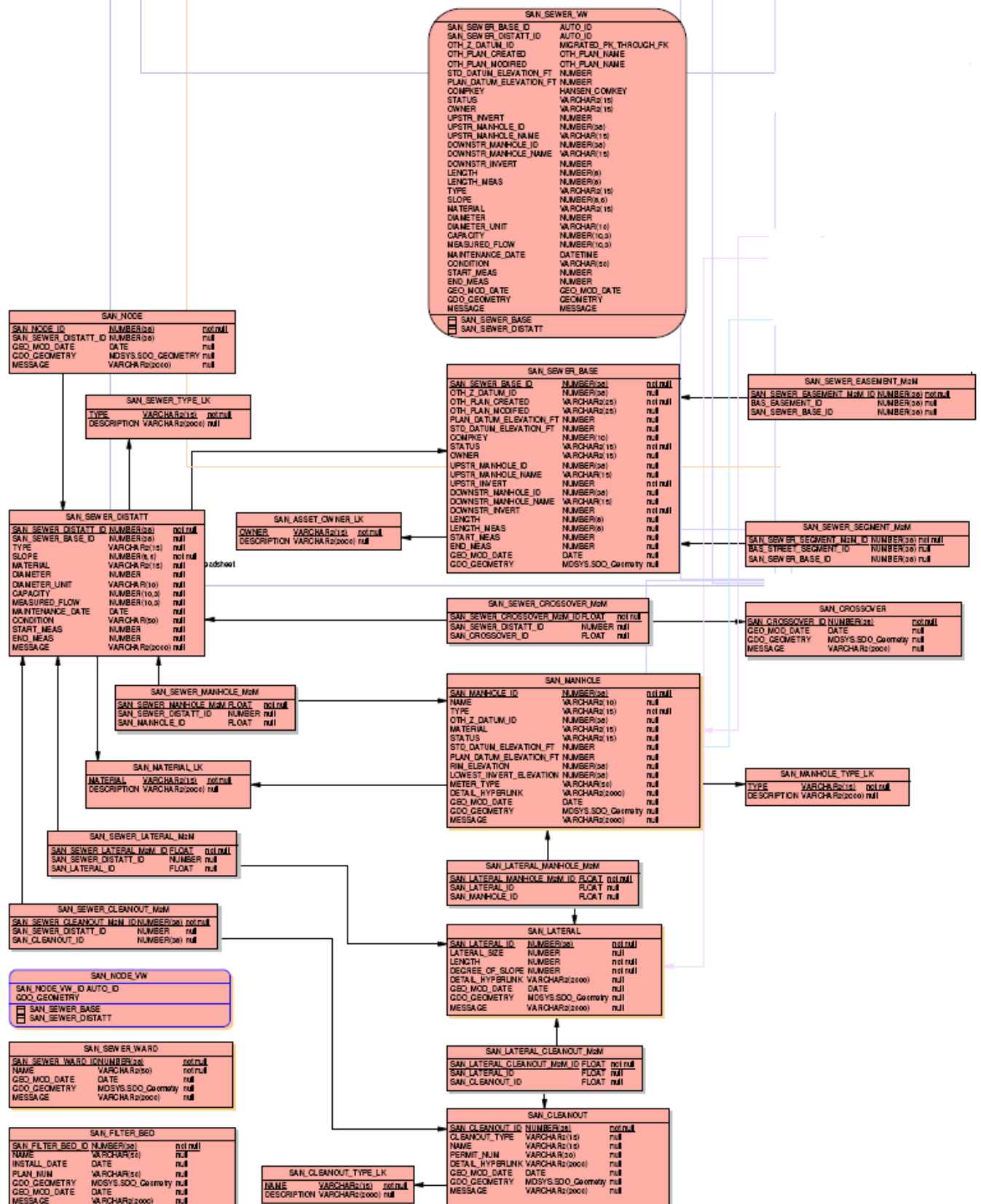
In addition to manholes, pipes, and pump stations, the GIS sewer database also include force mains, private mains, lined pipes and info, mains other than City owned, crossover, cap, gage station, structures such as weirs and junctions, laterals and breaks. Each facility type has its own symbols. Sanitary laterals are not included in the published maps due to visibility issue. The identification (ID) of a sanitary feature is automatically created when a new feature is entered into the database, and each ID is unique.

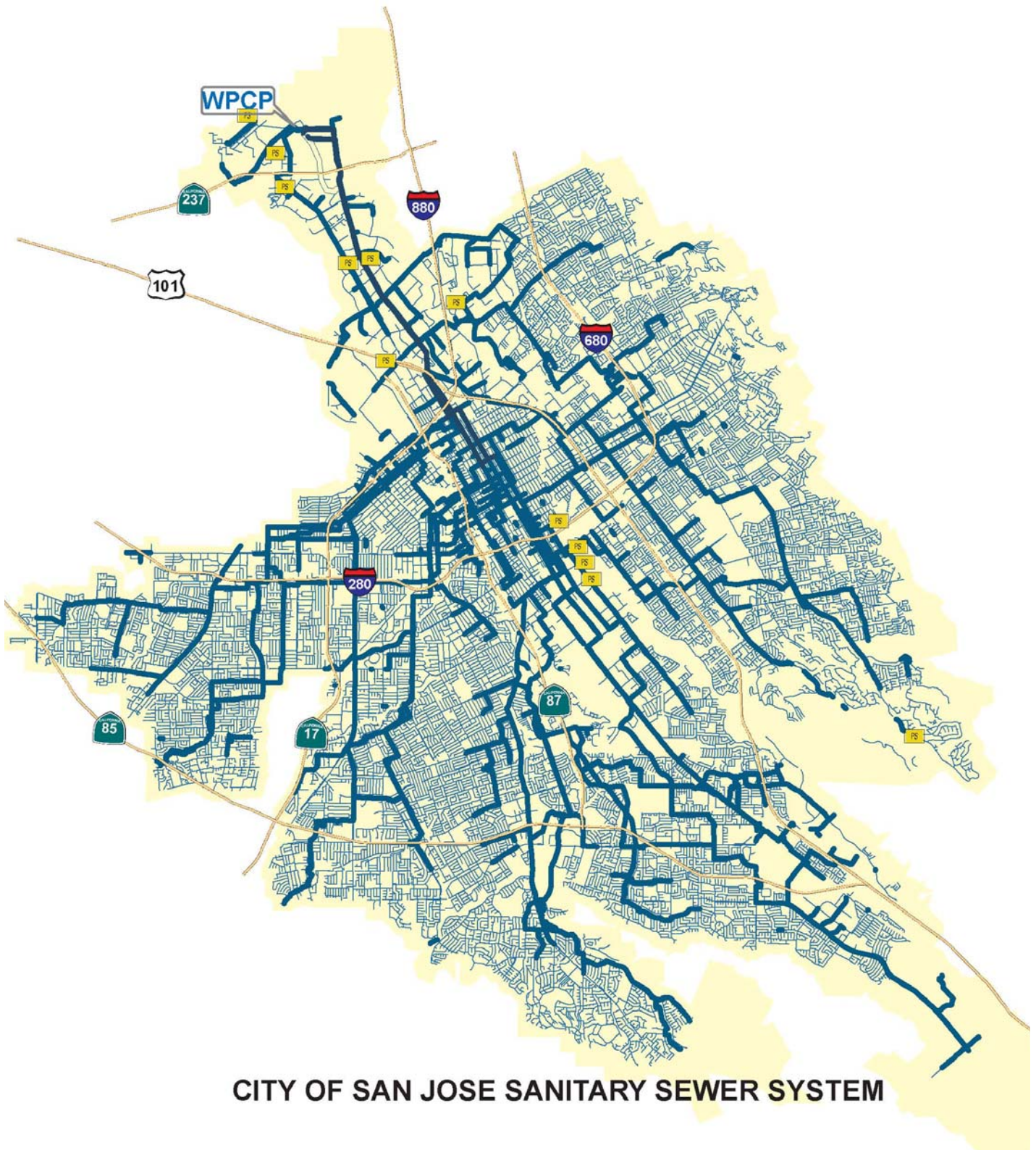
City also has a storm sewer base map. However, this map is not up to date due to limited funding. To date (August 2007), there are 172 plans and 761 discrepancy reports that are yet to be included into the computer system, and there is no specified time frame to complete this process. The map may be updated at least once a year if funding is available. The standard features in the storm sewer map are pipe, manhole, pump station, inlet, lateral, outfall, cap, break, and overhead drain. These features are represented with various symbols.

Oracle Spatial is used as the database, and GeoMedia Pro and Public Works Manager are used as a GIS platform to enter, manipulate, analyze and plot data.

The sanitary sewer data model in the figure below describes all the features and their associated attributes included in the database.

Sanitary Model





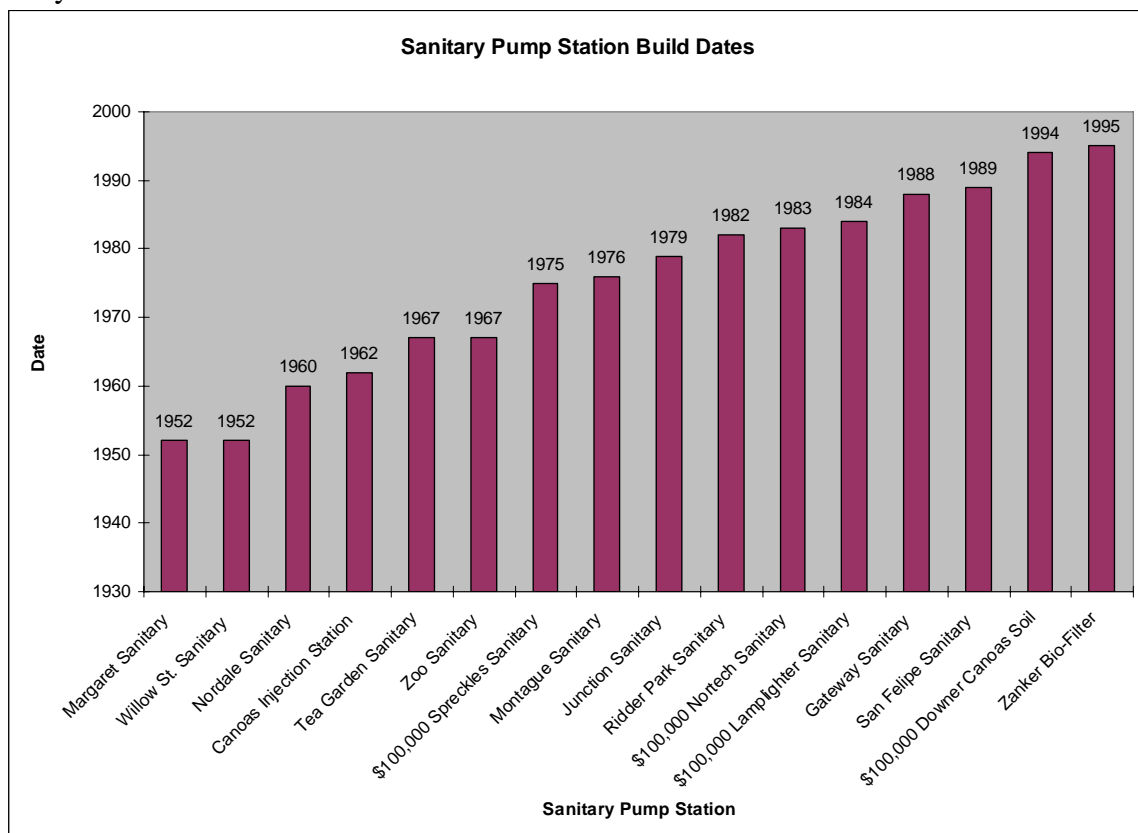
There is currently no link to the Hansen SMS software used by DOT. DPW gives DOT a copy of the files for Pipe Segment and Manhole Ids. The DPW plan has been to enhance the integration of the two systems after we complete rubber sheeting the base map and the sanitary sewer graphics layer. This would also include creation of an error reporting/feedback process. Meetings between DPS and DOT are ongoing regarding IMS Hansen data needs.

Maintenance access to the sewers is provided by over 35,000 manholes and a number of other structures such as cleanouts and flushing inlets. The collected wastewater is conveyed to the WPCP for treatment, recycling and disposal.

Each sewer maintenance crew is supplied with hardcopies of the sewer collection system maps for use in the field.

Pump Stations

There are sixteen (16) sanitary pump stations located throughout the City to assist in the conveyance of the wastewater to the WPCP.



Preventive Operation and Maintenance

Information Management Systems

The City currently uses two tools to provide the information that it feels is necessary to effectively manage the City's collection system: A Geographical Information System (GIS) and a computerized Sewer Management System (SMS).

Geographical Information System

GIS is a computer mapping system that links databases of geographically based information to maps that display the information. Over the past decade, the City of San Jose has converted all its sanitary sewer collection mapping and infrastructure inventory data into a GIS format.

As mentioned earlier, the entire City of San Jose sanitary sewer collection system is available in published mapbook format or can be assessed through the DPW's intranet site at <https://cpms.sanjoseca.gov/emap/>. DPW will continue to upgrade and maintain its GIS investment as technology and budget allow.

Computerized Sewer Management System

A computerized SMS is an essential tool for planning and scheduling sewer maintenance work and for tracking the maintenance history of individual sewer line segments. The City implemented a first generation SMS in 1988 and is currently utilizing Hansen Software for its existing SMS. The primary functions of the City's SMS are:

- Maintain service request and maintenance history information for each individual collection system asset.
- Produce and regularly update the maintenance schedule based on feedback information from the cleaning operations.
- Generate reports that support data analysis and decision making.
- Provide documentation for use in regulatory compliance reporting.
- Indicate line segments or structures that may be candidates for replacement or rehabilitation under the capital improvement program.

Current strategies are based on historical sewer back-ups and the age of the sanitary sewer collection system. Sanitary sewer overflows are an important indicator and are used when prioritizing any problem area. Implementations of the "high priority cleaning list" for sanitary sewer lines with chronic problems are identified (grease, roots or structural).

High Priority Cleaning List

Structural Conditions: The priority hit list revolves around the conditions of the sanitary collection system. Cycles are determined by conditions and frequency of stoppages. Locations are terminated from the hit list when repairs are completed and stoppages have been eliminated.

Root Control: Established neighborhoods with a history of root problems are continuously maintained with power rodding or high pressure cleaning.

Grease Conditions: History of repeated calls for grease stoppages are investigated and cleared by HP crews. A follow up video inspection will determine the cause, severity and the cycle needed to maintain the sanitary system. Locations with grease problems near restaurants are monitored and reported to ESD. Code enforcement reviews history of restaurant's records to ensure that proper disposal and maintenance of the grease traps are being maintained.

High Priority Cleaning Range: Priority I List = one to six months; Priority II List = six to twelve months.

The following is an outline of the present process DOT utilizes to clear stoppages:

- Sewer investigator receives call from dispatcher and investigates the nature of the call. Investigator attempts to clear stoppage or determines the method of cleaning and assigns to proper crews.
- Two HP crews are assigned to work either the Priority I or II List. The crews enter data daily into the high priority cleaning list database to document the location and completion date. This data is also entered into the SMS.
- Line cleaning areas are identified by council districts, using map pages to track the completion of an area.
- Prioritize the cleaning cycle of an area based on the severity of stoppages and/or complaints.
- The present preventive maintenance cleaning cycle is approximately twelve to fifteen years. It is hoped that DOT can increase its cleaning cycle to five to seven years.

The current method of cleaning the sanitary system is ball line cleaning, requiring a crew of three or more employees and two pieces of equipment. This process of line cleaning is very strenuous and time consuming. The set up for this process requires extensive traffic control and at times the detouring of traffic. When ball line cleaning, workers are often required to enter a confined space to remove debris from the collection system.

The method of using a high pressure unit requires two operators has the capability of effectively responding to an emergency call in a timely manner. The HP unit minimizes the physical or strenuous effort of cleaning the collection system, resulting in reduced injuries and employee time off.

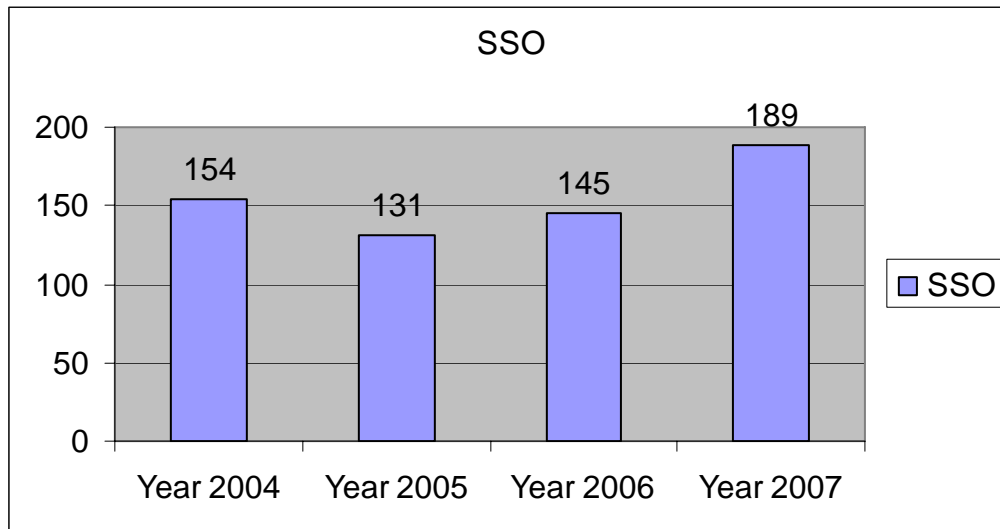
It is the goal of DOT to upgrade cleaning process from balling/rodding to Vactor capabilities, eliminate the confined space entries and enhance the method of our services by discontinuing the balling/rodding technique and expanding the use of vactor trucks. This method allows a quicker response to emergency sewer spills and overflow stoppages.

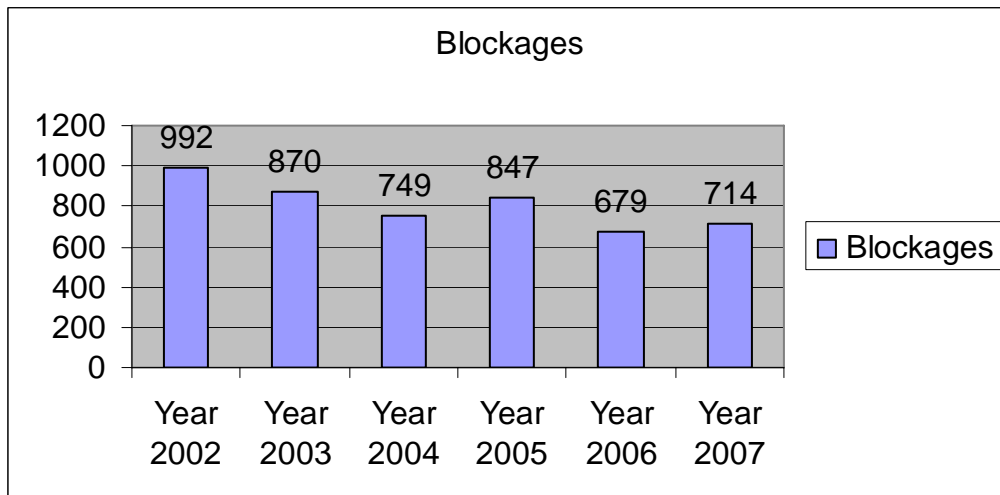
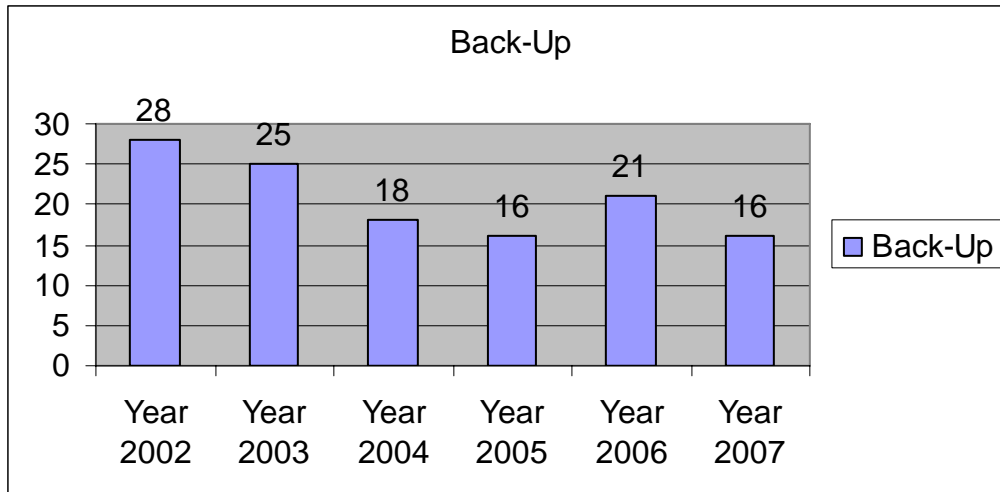
Prioritized Preventive Maintenance

The City's current sewer cleaning strategy is to clean its entire gravity collection system once every seven to ten years and to clean problematic (high priority cleaning lists) sewers more frequently. The high priority cleaning lists were derived from our SMS data history and field crew experience of areas with a history of stoppages due to root intrusions, debris, fats, oils and grease. The following table summarizes our sewer cleaning activities for calendar years 2003 through 2007.

Cleaning Miles (feet)					
Year	Balling	HP	Rodding	Other	Total
2003	773,520	2,204,400	185,328	19,536	3,182,784
2004	567,069	1,640,399	135,992	19,952	2,363,412
2005	268,093	1,978,401	131,394	47,078	2,424,966
2006	129,730	2,250,086	82,824	31,170	2,493,810
2007	10,094	2,737,440	62,600	7,838	2,871,972

Scheduled maintenance of pump stations is also performed to increase pump station efficiency, resulting in fewer stoppages. Furthermore, the City has a Ferrous Chloride injection station and two Biofilter stations that have regularly scheduled maintenance. All stations are visited weekly to assess the condition of the pumps (check for leaks and proper function) and wet wells.





The data from the calendar years 2002 through 2007 show that SSOs, backups and blockages have been relatively static while the data also show that our total sewer line cleaning miles have been increasing. This apparent contradiction may be explained by the field crews use of data available from the SMS and the “hit list” accrued over the years by experienced sewer maintenance workers. Focusing our maintenance activities to areas that historically had problems have led to fewer blockages and backups. An increase in DOT’s fleet of vactors (from the existing five to nine in FY 2008-09) will assist in mitigating the spike in SSOs for 2007.

DOT has also been working more closely with DPW to address neighborhood sewer issues. One of the outputs for this SSMP will be to implement monthly meetings with DPW to initiate ongoing dialogue between the departments to mitigate problems DOT is experiencing in the field.

Rehabilitation and Replacement Plan

The City has no system to assess the physical condition of the sanitary sewer infrastructure. Projects are the result of observed deficiencies in the operation or the capacity of the sanitary system. Because it is physically and financially impractical to perform a comprehensive video review of the entire system, our assessments are limited to those that are generated from deficiencies in the operational characteristics and the capacity. Over the next two years, DOT and DPW will conduct a study to approximate the condition of the entire system through sampling and projections, but actual system condition can only be approximated because of the impracticality of televising the entire system. The estimated cost of such an analysis is up to \$2.0M and should result in the following outcomes:

- Estimated condition of all sanitary sewers based on projections from sampling.
- Identification of specific pipelines or areas that merit further investigation for probable rehabilitation
- Budgeting tool to allow the City to plan for sufficient funding to meet anticipated structural repair demand

Currently, the primary asset management tools used by the City are the Geographical Information System (GIS), the DOT dispatch data, and a computerized Sewer Management System (SMS).

Anticipated capital improvements and maintenance needs

1. Physical Conditions

As mentioned earlier, DOT does not have a comprehensive condition assessment of the storm drainage infrastructure. The maintenance work is mainly performed reactively in response to complaints, incidents, and event driven situations. There is a need for this assessment in order to prepare a proactive, preventive maintenance management program.

In order to determine the future maintenance needs, a comprehensive condition assessment study needs to be performed. This document is currently not available and DOT is planning a strategy to prepare such a document within the next two years. The cost of preparation the documents are currently unknown, but it is believed to be around \$2M.

2. Operational Conditions

The above mentioned condition assessment document will also provide tools for a maintenance schedule in order to establish a proactive sewer cleaning methodology and schedule that will facilitate an optimal operation of the system.

While the storm and sanitary programs operate a seemingly adequate fleet of vehicles, much of it is outdated and inefficient in performing sewer maintenance activities. Some equipment is physically demanding on maintenance personnel, and more prone to

causing injuries. Of the vehicles that could be incorporated into an updated fleet, the average age is over ten years old, and many of them are utilized for multiple shifts several times per week. Consequently, much of this critical equipment is unreliable, in generally poor to very poor condition, and in need of replacement. This issue is further discussed in the “Fleet Program” of this document.

The City’s sewer maintenance equipment, on average, is over ten years old, and many pieces are utilized at least two shifts everyday. Much of the equipment is unreliable, generally in poor to very poor condition, and in need of replacement. More important is that the equipment is outdated and inefficient in performing sewer maintenance activities such as line cleaning, clearing blockages, and cleaning up spills. With existing equipment, additional staff is required to perform cleaning activities that limit production and cleaning cycles. The equipment is also physically demanding on maintenance personnel and more prone to causing injuries.

Resolving these issues related to the state of the City’s equipment is the most pressing one for DOT. An investment in newer, more effective and efficient equipment, along with a adequately funding equipment replacement program, is essential in ensuring the proper function of the City’s sewer collection system and achieving compliance with the pending SSMP mandates. It is estimated that approximately \$3 million is needed over the next five years for new equipment with an ongoing investment of \$500,000 for regular equipment replacements.

3. Common to Physical Conditions and Operational Conditions

DOT’s sanitary maintenance budget for 2007-08 is \$11.1M. This allocated fund is strictly for maintenance programs and resolution of known problems. At present, there is no program to identify the condition of infrastructure other than those generated from deficiencies capacity or operations. Funding needs for the operation and maintenance of the sanitary sewer infrastructure is currently not known, but is estimated to be in the range of \$3M to \$5M per year for the next five years. Furthermore, the condition assessment and master plan would almost assuredly generate additional projects/workload above and beyond these costs.

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4. Capacity

Historically, the majority of funds (between 50% to 60%) in the Sanitary Sewer Capital Improvement Program are used to rehabilitate aging sewer mains. Construction

projects in the CIP fall into either categories: (a) to enhance sewer capacity; (b) to rehabilitate existing sewers with extensive and/or severe deterioration.

The Sanitary Sewer Capital Improvement Program is used to increase the capacity or rehabilitate the lines as determined based on recurring problems (such spills, blockages, and odor) or staff's historical knowledge.

Current funding

Funding for this program has steadily decreased during the last several fiscal years. The 2008-2012 Sanitary Sewer Capital Program provides for \$100.8M in funding, of which \$32.3M is allocated for the 2007-08 fiscal year.

In the current 5-year CIP, approximately \$37.8M is allocated for capacity projects, including the Edenvale Supplement projects which will provide increased sewer capacity for south San José, Edenvale Redevelopment Area, existing south San José neighborhoods and North Coyote Valley. For rehabilitation projects, \$68.5M is programmed for a variety of projects that will improve large diameter interceptors, trunk line and neighborhood collection systems.

Projects in the current five-year CIP includes:

- \$50.7M for capacity improvement projects
- \$28.5M for structure enhancement (rehabilitation) projects
- \$14.0M for program management projects (flow monitor, master planning, development reviews, etc.)

Future needs

To determine the future needs of capacity improvements, a sanitary sewer master plan is required. This document is currently being prepared by the City. The Phase I Master Plan, also named Phase I Capacity Assessment was completed in Fall 2004 and Phase II will be done in 2011) at an approximate total cost of \$6M. The actual cost of the most needed infrastructure improvements would be in hundreds of millions of dollars. Listed below are some of sanitary sewer projects that have been evaluated and prioritized, but is awaiting funding.

- Capacity improvement projects identified by the Phase I Capacity Assessment (for the city's north, south and central areas): \$104M
- Rehabilitate existing RCP trunk lines: \$18M
- Downtown Core: \$28M;
- North San José Intensification: \$25M;
- Midtown: \$5M,
- BART: \$5M
- The Phase II project is underway to identify the capacity constraints in the eastern and western areas of the City.
- Pump Station Rehabilitation Projects. The cost is currently unknown.

- Replacement of existing fleet of storm and sanitary equipment. The cost is currently unknown

Funding Strategy

An increase in the Sanitary Sewer Fee of 9% was approved for current fiscal year, and consecutive 30% increases will be requested in the next two years. A significant portion of these increases will be used to address the requirements of the SSMP.

Other proposed funding sources for maintenance are listed as follows:

- Using program reserves or ending fund balances for one-time costs
- Sanitary Sewer Service and Use Charge increase.
- Community Facilities Districts, Maintenance Assessment Districts and Home Owners Associations to reduce costs to the City.
- Enterprise Revenue Funds – Using rates to float bonds that generate enough capital to do large improvements.
- Update the “sanitary Connection Fees” collected from new developments

Sources of Funding for CIP

The primary funding sources for the Sanitary Sewer System Capital Improvement Program are the Sewer Service and Use Charge (SS&UC) Fee, Sanitary Sewer Connection Fee, and “Joint Participation” contributions from the City of Santa Clara, the County Sanitation District 2-3, and the West Valley Sanitation District for the share of their use of San Jose sewer lines.

Part 3, “Sewer and Use Charges” in Chapter 15.12, “Sewer” of City’s Municipal Codes provides all the details about the SS&UC fee. The purpose of these charges is to derive revenue which shall be used only for the acquisition, construction, reconstruction, maintenance, and operation of the sanitary sewer system of the City of San Jose, to repay principal and interest on any bonds which may be issued for the construction or reconstruction of sanitary facilities, and to repay federal or state loans or advances which may be made to the city for the construction or reconstruction of sanitary facilities. Currently, the annual transfer of the SS&UC fee for collection system CIP use is \$14.475 million.

Each year, the City Council reviews the rates for SS&UC to determine whether adjustments are necessary to align revenue with program costs. For the majority of users, this charge is billed as a single line amount on property tax assessments. However, sanitary sewer charges for monitored industrial users (in excess of 25,000 gallons per day) are individually calculated and are billed on a monthly basis. There are over 213,000 residential and non-residential customers within the City of San Jose service area.

Part 3, “Sanitary Sewer Sewage Treatment Plan Connection Fee” in Chapter 15.16, “Sewer Connections and Storm Drainage” of the City’s Municipal Codes describes the Sanitary Sewer Connection Fee. The purpose of the sanitary sewer connection fees established is to derive revenue which shall be used only for the construction and reconstruction of the sanitary sewer system of the City of San Jose and for the acquisition of land for such system. The fee is based on the number of single and multi-family residential units built and the acres developed on commercial and industrial properties. The annual total of such fees is approximately \$1.25 million.

The “Sanitary, Storm and STP Fees Information and Collection Procedures” issued by the Department of Environmental Services describes the procedures for the collection of the sanitary sewer connection fees. Currently, the sanitary sewer connection fee per lot rate for single and multi-family residential units is \$447 and the per-acre rate for the commercial and industrial properties is \$1,991.

“Joint Participation” contributions are based on the eligible project expenditures within the 5-year CIP and the percentage of reserved capacity of the joint sewer of the participating agency. These contributions total approximately \$3 million of a 5-year CIP cycle.

Sanitary Sewer Programs

Interceptor System Construction and Rehabilitation Program

The interceptor system includes the paralleled large pipes (ranging from 54-inch to 90-inch in diameter) located generally on Fourth Street and Zanker Road in North San Jose. This system collects sewage from all the area-wide and local sewer systems of the City and conveys it to the Water Pollution Control Plant (WPCP).

Presently, the City has three major sewer interceptors. The Interceptor System Construction and Rehabilitation Program is currently being used for the construction of the Fourth Major Interceptor and the rehabilitation of the existing interceptors.

Flow Monitoring and Master Planning Program

City’s previous city-wide sewer master plan effort in 1979, based on the City’s 1975 General Plan, had reached the limits of its planning horizon. In fall 2002, the City initiated a new Sanitary Sewer Master Plan that used current planning documents (San Jose 2020 General Plan and redevelopment plan). In October 2004, City completed the Sanitary Sewer Master Plan for the south, central and north areas. The Master Plan for the east and west areas begins in August 2007. The new master plan develops state-of-the-art sewer flow modeling techniques, which systematically utilize planning, flow and sewer data, to assess the capacity of the system and provide an effective tool for planning and design of future improvements to the City’s sewer system infrastructure.

The Master Planning Program consists of capacity assessment and condition assessment, which will identify sewer deficiencies and recommend capital projects for improvement.

Inflow and Infiltration (I&I) Reduction Program

City has established an Inflow and Infiltration (I&I) Reduction Program. This I&I Reduction Program is a key element of the Environmental and Utility Services Business Plan. This program is intended to rehabilitate portions of the sewer system where groundwater, stormwater and other sources of water enter the sewers. The goal of the I&I Reduction Program is to decrease the flow to the WPCP and help continue to meet the discharge flow cap. This program operates in conjunction with the Flow Monitoring and Master Planning Program to identify areas of the system that have substantial I&I, and construct improvements to reduce I&I.

Neighborhood Sewer Improvement Program

This program is intended to include additional expenditures for the improvement of the aging and structurally deteriorated local neighborhood sewer systems.

CIP Budgets

The average 5-year CIP budget is approximately \$100 million. This funding amount is sufficient to meet the capacity and rehabilitation needs of the sanitary sewer in the currently planning cycles. The majority of funds in the Sanitary Sewer System Capital Program are used to construct sewer improvement projects. Construction projects in the CIP generally fall into one of the two categories: (a) enhance sewer capacity in substantially built-out areas and/or less-developed areas due to expansion; or (b) rehabilitate, repair or replace existing sewers, with higher priorities given to those with extensive, severe deterioration. About 50% of the budget is allocated to system rehabilitation/repair/replacement, and the other 50% to capacity related projects. Costs include planning, design, construction, and inspection of new or rehabilitated facilities.

Capacity-enhancement projects are recommended through the Sanitary Sewer Master Plan which uses current planning documentation (San Jose 2020 General Plan and redevelopment plans) and state-of-the-art flow modeling techniques for sewer capacity assessment. The prioritization of recommended projects was based on the planning horizon in which the capacity deficiency would first occur (existing or future scenarios) and the potential for a sewer overflow under a 10-year design storm peak wet weather flow condition.

Rehabilitation/repair/replacement projects are selected based on hydrogen sulfide studies (that analyze pipe corrosion), maintenance records and reports, and actual pipe failures, whether due to pipe corrosion or other physical deficiencies. The actual condition of candidate projects is verified by closed-circuit television (CCTV) inspections, which are then evaluated to establish project priorities.

Anticipated FY 07-08 Highlights

Operation and maintenance:

- Purchase and acquisition four new vacuum equipped trucks with video cameras – Estimated at \$1M.
- Continue with SSMP development
- Identify funding for Condition Assessment program
- Additional maintenance responsibilities from the County annexations

Capacity:

- 60” Brick Interceptor Phase VIA - \$1.7M
- Edenvale Supplement Phase VA - \$1.9M
- Julian-Sunol Supplement Rehab - \$1.2M
- Union/Almaden Oak SS Rehab - \$1.6M
- Willow Glen SS Rehab - \$1.1M
- Infiltration and inflow study – \$2.0M

Anticipated FY 08-09 Highlights

Operation and Maintenance:

- Continuation of implementation of the subsequent phases of SSMP
- Probable increase in sewer cleaning activities
- Additional maintenance responsibilities from the County annexations

Capacity:

- 60” Brick Interceptor Phase VIA - \$10.9M
- Edenvale Supplement Phase VA - \$310,000
- Julian-Sunol Supplement Rehab - \$314,000
- Central Interceptor - \$1.6M
- Infiltration and inflow study – \$2.0M

Training

The Sewer Line Cleaning sections make sure the employees have the necessary skills to perform the operations and maintenance required by going over the standard operating procedures and competency reports for each piece of equipment assigned to that section and on the job training. A lot of our training is done through mentoring and the rotation of personnel among the different crews and equipment.

The employees are required to attend an annual Confined Space Training class and be certified in CPR/First Aid training every two years.

When responding to service requests by citizens, the crews check the upstream and downstream manholes to make sure they are clear, and then check the reporting party's

address for an approved cleanout. If they have an approved cleanout, they then proceed to clear the blockage. If it is an unapproved cleanout, they will inform them of city procedure and to call a plumber for relief. If no one is home, they will leave a door-hanger informing the resident of their findings. If the crew comes across a situation that is unfamiliar to them, they will call the Senior Maintenance Worker or other crew members as how they should proceed.

All of the DOT's Standard Operating Procedures (SOP) for each of its functions are available for viewing at each work site (Mabury Yard and West Yard).

Contingency Equipment and Replacement Inventories

List of equipment dedicated to Maintenance of Collection System

Equipment Quantity	Equipment Description	Equipment Purpose
5	Vactors*	Vacuum/remove debris from manholes/mains (usually up to approximately 50 feet of manhole)
5	High Pressure Cleaning Vehicles	Preventive maintenance and immediate service requests for main line cleaning
7	Utility Trucks	
4	Water Tankers	Provide water for on-site purposes
3	Power Rodders	Main line cleaning
2	Harbens	Tow Behind High Pressure Cleaner
11	Pumps	Portable pumps for use during maintenance activities

*An additional four vactors have been approved for purchase in the 2007-2008 and 2008-2009 fiscal years.

This section provides a summary of the equipment used for the maintenance of the wastewater collection system. Furthermore, DOT works closely with the Department of General Services to ensure that each piece of equipment is functioning properly and safely. Replacement of equipment and spare parts for emergencies are addressed as budgets will allow.